

[54] **CODE READING SYSTEM FOR IDENTIFICATION OF MOVING AND STATIONARY OBJECTS UTILIZING NONCOHERENT OPTICS**

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[58] Field of Search....250/216 R, 220 R, 219 D, 219 DD, 250/237 G; 340/173 LT, 173 LM; 356/71; 350/162 SF, 162 ZP, 321

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[57]

ABSTRACT

For purposes of material handling and inventory management of railway cars, trucks, crates, packaged and unpackaged goods, and similar objects, markings, comprising a plurality or a composite of coded patterns, on such moving and stationary objects are used for their identification or identification of their contents. To permit such identification, an extended source of spatially incoherent light is modulated by passage through or reflection from the markings to provide input images of the coded patterns. The input images are projected through a pair of plates each having a Fresnel zone thereon for transformation of the input images into output signals corresponding to the optical Fourier transforms of the input images. Since the spatial positions and angular orientations of the output signals are dependent upon the spatial frequencies and orientations of the input images, the coded markings comprise a plurality of distinct patterns of different orientation and spatial frequency which can be correlated to a numerical identification system corresponding to information concerning the objects. The system is designed to operate as close to the geometrical optics limit as is practically feasible.

10 Claims, 24 Drawing Figures

